Digital AlphaServer 8200
and AlphaServer 8400 Systems

V6.0 Firmware Update Procedures And Release Notes

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1 Introduction

This guide is intended for managers of the following systems:

- Digital AlphaServer 8200
- Digital AlphaServer 8400

This guide describes how to update the AlphaServer 8200/8400 console firmware using the Loadable Firmware Update (LFU) utility. It also provides release notes pertaining to the Console and Diagnostic Firmware.

> The console firmware described in this document cannot be used with GS60/GS60E/GS140 systems. For information on GS60/GS60E/GS140 system firmware, consult the **Compaq AlphaServer GS60/GS60E/GS140 Firmware Update Procedures and Release Notes.**

1.1 Firmware and Operating System Revision Matrix

Figure 1 shows the compatibility between the firmware revisions and revisions of OpenVMS, Tru64 UNIX (formerly Digital UNIX), and Windows NT.

Figure 1 AlphaServer 8200/8400 FW/SW Revision Matrix

Console FW	LFU	OpenVMS	Tru64 UNIX	Windows NT
V6.0	V16	V7.1, 7.1-2, V7.2. V7.3 and variants	V4.0, V5.0, V5.1, V5.2 and variants	V4.0 (service pack 3 required)

1.2 Configuration Utilities

The EISA and RAID Configuration Utilities are available on separate media (floppy disks) for use on Digital AlphaServer 8200/8400 Systems. For compatibility with this firmware release, the following minimum revisions of the configuration utilities must be used if required:

Figure 2 Configuration Utility Revisions

Utility	Kit Number	Part Number	Minimum Required Rev.
EISA Config. Utility for VMS & UNIX	QA-01YAA-HC	AK-Q2CRJ-CA	V1.9
EISA Config. Utility for Windows NT	-	AK-QF1GF-CA	V1.11A
RAID Config. Utility	QB-2XHAH-SB	-	V3.2

1.3 Hardware Manuals

These Firmware Release Notes do not describe how to use the console commands nor do they list their error codes. You can find information about these subjects in the associated documentation listed in the following figure:

Figure 3 Hardware Manuals

Title	**Part Number**
AlphaServer GS60 and 8200 Installation Guide	EK-T8230-IN
AlphaServer GS140 and 8400 Installation Guide	EK-T8430-IN
AlphaServer GS60/140 and 8200/8400 Operations Manual	EK-T8030-OP
AlphaServer 8200/8400 System Service Manual	EK-T8030-SV

2 AlphaServer 8200/8400 Firmware Update Procedures

This chapter describes how to run the Loadable Firmware Update Utility (LFU) to update the AlphaServer 8200/8400 console and I/O adapter firmware.

For more information about the Loadable Firmware Update Utility commands and console commands, see the *AlphaServer GS60/140 and 8200/8400 Operations Manual*.

2.1 Console Firmware Components – Revision Information

The LFU V15 image contains the Console V6.0. The V6.0 Console consists of the following firmware components :

Figure 4 Console V6.0 Firmware Components and Revisions

Component	Revision Information
SRM Console Code	V6.0
SROM	V3.1
VMS PALcode	V1.21-1
UNIX PALcode	V1.23-1
ISP1020/1040 FW	V5.57
AlphaBIOS	V5.70-3 (V5.70c)

LFU will display the AlphaBIOS version as V5.70-3 while the actual version is V5.70c.

2.2 Revision Information for the Loadable Firmware Update Utility

The current LFU Release **AS8000_V16** (for AlphaServer 8200/8400 Systems) is booted from the local SCSI CD-ROM drive or InfoServer using the Alpha Systems Firmware Update CD V6.0. Detailed instructions for booting the LFU are included in the following sections.

This LFU release contains the firmware revisions shown in the following figure:

Figure 5 LFU V16 Firmware Revisions

Name	Hardware Rev	Firmware Rev
CIPCA	All revs	A420
CIXCD	All revs	7
DEFPA (DFXAA)	All revs	3.20
DEMFA	All revs	2.1
DEMNA	All revs	9.4

KCM44	All revs	3.1
KDM70	All revs	4.4
KFMSB	Pre-C02	1.0
KFMSB	C02	2.4
KN7CC	All revs	6.0
KN7CD	All revs	6.0
KN7CE	All revs	6.0
KN7CF (CPU)	All revs	6.0
KZMSA	Rev F and greater	5.7
KZPSA	All revs	A12

2.3 !!! IMPORTANT CAUTIONS TO NOTE BEFORE UPDATING FIRMWARE!!!

2.3.1 Operation With Mixed Firmware Revisions is NOT Supported

In a multiprocessor system, do NOT attempt to initialize or operate the system, with mixed-revisions of console firmware installed on the CPUs. Always insure that the CPUs all have the same revision of Console Firmware, before initializing or powering-up the system. Otherwise, the system may hang, or some CPUs may not operate. When replacing or adding CPUs to your system, you must insure that all CPUs (the old ones and the new ones) have the same revision of console firmware installed. The following three cases are noted :

1. When adding a CPU with HIGHER rev console firmware to a system having LOWER rev firmware, first update the existing CPU firmware to the higher rev. Following that, power-down the system and add the new CPU. Then, power-up the system and proceed to boot, etc.
2. When adding a CPU with the SAME rev firmware as the other CPUs, simply power-down the system and add the new CPU. Then, power-up the system and proceed to boot, etc. In this case, no firmware update is necessary.
3. If it became necessary to add a CPU with LOWER rev firmware to a system having HIGHER rev firmware (such as replacing a CPU with an older spare), you must first update the firmware on the new CPU to match the firmware rev of the existing CPUs. To do this, first power-down and REMOVE the existing CPUs, and install only the new CPU. Then, power-up and perform a console firmware update on the new CPU. Then, power-down and re-install the existing CPUs. Finally, power-up again, and proceed to boot, etc.

2.3.2 MINIMUM Required Console Firmware Revision

Do NOT attempt to update console firmware to a lower revision than shown below. Installing a revision of firmware below the minimum required will render the CPU module INOPERABLE (in some cases, the Loadable Firmware Update utility will not allow the update, if it were attempted, and would display an error message).

Figure 6 Minimum Required Console Revision for CPU Operation

CPU	Minimum Console Revision
E2056-CA (Single CPU, 300 MHZ Rev. H and above)	V2.2-102
E2056-DA (Dual CPU, 300 MHZ Rev. P and above)	V2.2-102
E2061-CA (Single CPU, 350 MHZ Rev. A and above)	V3.0-9
E2061-DA (Dual CPU, 350 MHZ Rev. A and above)	V3.0-9
E2062-DA (Dual CPU, 440 MHZ All Revs)	V4.04
E2065-DA (Dual CPU, 625 MHZ All Revs)	T5.1-18

2.4 AlphaServer 8200/8400 Firmware Update Procedure

The LFU program is booted from the local CD-ROM drive or InfoServer.

When running the OpenVMS or Tru64 UNIX operating systems, the environment variable “console” MUST be set to “serial” in order to boot the Loadable Firmware Update Utility (LFU).

It is required that the console be initialized (*P00>>> init)* before booting the LFU.

If booting from your local CD-ROM drive, see the following section. If booting from the InfoServer, see the section following that.

The version numbers displayed by the system in the following examples may not match exactly those that you will see when following the procedure. They may vary depending on the initial configuration and revision of your system. Also, console build dates shown are examples only, and may not match the V6.0 console image.

2.4.1 Example of Booting LFU from the Local CD-ROM Drive

Set “auto_action” to “halt” before running LFU. Afterward, you may restore it to its normal desired value.

1. **Initialize System :**

```
P00>>>i
Initializing...
```

```
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.f4.f3.f2.f1.f0.
ef.ee.ed.f4.
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.f4.f3.f2.f1.f0.
ef.ee.ed.a2.a4.a5.a7.a8.a9.f4.ec.eb.ea.e9.e8.e7.e6.e5.e3.

F   E   D   C   B   A   9   8   7   6   5   4   3   2   1   0   NODE #
                            A   A   M   .   M   .   .   .   P   TYP
                            o   o   +   .   +   .   .   .  ++   ST1
                            .   .   .   .   .   .   .   .  EB   BPD
                            o   o   +   .   +   .   .   .  ++   ST2
                            .   .   .   .   .   .   .   .  EB   BPD
                            +   +   +   .   +   .   .   .  ++   ST3
                            .   .   .   .   .   .   .   .  EB   BPD

                                .   +   +   +   +   +   +   +   C0 PCI +
                +   +   .   +   .   +   +   +   .   .   .   +   C1 PCI +
                            .   .   .   .   .   .   .   .          EISA +

.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C4
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C5
    +   .   .   .   .   .   +   .   .   .   +   +   +   +       C6 XMI +
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C7

                            .   .  A1   .  A0   .   .   .   .   ILV
                            .   . 4GB   . 4GB   .   .   .   .   8GB
AlphaServer 8400 10-5/625/4, Console T5.8-1 12-JUL-2000 16:02:24
SROM V3.1, OpenVMS PALcode V1.21-1, Tru64 UNIX PALcode V1.23-1
System Serial =AY12345678, OS = OpenVMS,  9:38:30  December 28, 2000
Configuring Graphics
Configuring I/O adapters...

(...Adapter Listing Omitted...)

P00>>>
```

2. Enter (show dev) to find name of CD-ROM drive :

```
P00>>>show dev
polling for units on kfmsb0, slot 6, bus 0, xmi0...
pub.6.0.6.0        pub                   Bus ID 6  2.4
polling for units on isp0, slot 0, bus 0, hose4...
pkc.7.0.0.4        pkc       term on     Bus ID 7  5.57
dkc400.4.0.0.4     DKC400                   RZ1CB-CA  LYJ0
polling for units on isp1, slot 1, bus 0, hose4...
pkd.7.0.1.4        pkd       term on     Bus ID 7  5.57
polling for units on isp2, slot 4, bus 0, hose4...
pke.7.0.4.4        pke       term on     Bus ID 7  5.57
polling for units on isp3, slot 5, bus 0, hose4...
pkf.7.0.5.4        pkf       term on     Bus ID 7  5.57
polling for units on floppy0, slot 0, bus 1, hose5...
dva0.0.0.1100.5    DVA0                     RX26/RX23
polling for units on kzpaa0, slot 5, bus 0, hose5...
pkg.7.0.5.5        pkg                   Bus ID 7
dkg400.4.0.5.5     DKG400                   RRD46  0557
polling for units on kzpsa0, slot 9, bus 0, hose5...
pkh.7.0.9.5        pkh     TPwr 1 Fast 1 Bus ID 7   P01  A11
dkh300.3.0.9.5     DKH300                   RZ28M  0568
dkh500.5.0.9.5     DKH500                   RZ28M  0568
P00>>>
```

3. Enter (boot) command, to boot CD on drive :

```
P00>>>boot dkg400
(boot dkg400.4.0.5.5 -flags 0)
SRM boot identifier: scsi 5 5 0 4 400 ef00 11000
boot adapter: kzpaa0  rev 2 in bus slot 5 off of kftia0 in TLSB slot 7
```

```
block 0 of dkg400.4.0.5.5 is a valid boot block
reading 896 blocks from dkg400.4.0.5.5
bootstrap code read in
Building FRU table......
FRU table size = 2fe6(12262)
base = 200000, image_start = 0, image_bytes = 70000
initializing HWRPB at 2000
initializing page table at 1f2000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
```

4. **The system will respond by displaying system-specific “READ ME FIRST” information on the screen,** followed by display of the default firmware update utility bootfile name, and the prompt “Bootfile:” At this point, you may press the RETURN or ENTER key to load the latest (current) update, or you may type a specific bootfile name to load a previous (older) version.

```
Bootfile: <enter>

0123456789 ABCD 9876543210

Starting new console, Please wait a minute...
Configuring Graphics

Starting Firmware Update Utility

Unpacking firmware files

(...File Listing Omitted...)

                ***** Loadable Firmware Update Utility *****
---------------------------------------------------------------------------
 Function    Description
---------------------------------------------------------------------------
 Display     Displays the system's configuration table.
 Exit        Done exit LFU (reset).
 List        Lists the device, revision, firmware name, and update revision.
 Lfu         Restarts LFU.
 Modify      Modifies port parameters and device attributes.
 Readme      Lists important release information.
 Update      Replaces current firmware with loadable data image.
 Verify      Compares loadable and hardware images.
 ? or Help   Scrolls this function table.
---------------------------------------------------------------------------

UPD>
```

2.4.2 Example of Booting LFU from the InfoServer

Set “auto_action” to “halt” before running LFU. Afterward, you may restore it to its normal desired value. Normal booting time can be as long as one minute.

1. **Initialize System :**

```
P00>>>i
Initializing...

ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.f4.f3.f2.f1.f0.
```

```
ef.ee.ed.f4.
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.f4.f3.f2.f1.f0.
ef.ee.ed.a2.a4.a5.a7.a8.a9.f4.ec.eb.ea.e9.e8.e7.e6.e5.e3.

F   E   D   C   B   A   9   8   7   6   5   4   3   2   1   0   NODE #
                            A   A   M   .   M   .   .   .   P   TYP
                            o   o   +   .   +   .   .   .  ++   ST1
                            .   .   .   .   .   .   .   .  EB   BPD
                            o   o   +   .   +   .   .   .  ++   ST2
                            .   .   .   .   .   .   .   .  EB   BPD
                            +   +   +   .   +   .   .   .  ++   ST3
                            .   .   .   .   .   .   .   .  EB   BPD

                                .   +   +   +   +   +   +   +   C0 PCI +
                +   +   .   +   .   +   +   +   .   .   .   +   C1 PCI +
                            .   .   .   .   .   .   .   .          EISA +

.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C4
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C5
    +   .   .   .   .   .   +   .   .   .   +   +   +   +       C6 XMI +
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C7

                            .   .  A1   .  A0   .   .   .   .   ILV
                            .   . 4GB   . 4GB   .   .   .   .   8GB
AlphaServer 8400 10-5/625/4, Console T5.8-1 12-JUL-2000 16:02:24
SROM V3.1, OpenVMS PALcode V1.21-1, Tru64 UNIX PALcode V1.23-1
System Serial =AY12345678, OS = OpenVMS,  9:38:30  December 28, 2000
Configuring Graphics
Configuring I/O adapters...

(...Adapter Listing Omitted...)

P00>>>
```

2. Enter (sho net) to find name of network adapter :

```
P00>>>show net
polling for units on demna0, slot 1, bus 0, xmi0...
exa0.0.0.1.0       08-00-2B-26-F1-51
polling for units on tulip0, slot 2, bus 0, hose4...
ewa0.0.0.2.4       00-00-F8-21-46-77    Twisted-Pair
polling for units on tulip1, slot 6, bus 0, hose4...
ewb0.0.0.6.4       00-00-F8-21-43-D7    Twisted-Pair
polling for units on tulip2, slot 12, bus 0, hose5...
ewc0.0.0.12.5      00-00-F8-25-80-A1    Twisted-Pair
polling for units on tulip3, slot 6, bus 0, hose5...
ewd0.0.0.6.5       00-00-F8-10-BA-D4    Twisted-Pair
P00>>>
```

3. Enter (boot) command as shown, using desired network adapter, and specifying the correct filename (AS8000_V16 in this example) :

```
P00>>>b -fi AS8000_V16 ewa0
(boot ewa0.0.0.2.4 -file AS8000_V16 -flags 0)
SRM boot identifier: mop 4 2 0 0 0 ef00 21011 00-00-F8-21-46-77 1
boot adapter: tulip0  rev 24 in bus slot 2 off of kftia0 in TLSB slot 7

Trying MOP boot.
................................................................

Network load complete.
Host name: BOOBOO
Host address: aa-00-04-12-34-56

bootstrap code read in
```

```
base = 200000, image_start = 0, image_bytes = 3e8800
initializing HWRPB at 2000
initializing page table at 1f2000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
0123456789 ABCD 9876543210

Starting new console, Please wait a minute...
Configuring Graphics

Starting Firmware Update Utility

Unpacking firmware files

(...File Listing Omitted...)

                ***** Loadable Firmware Update Utility *****
---------------------------------------------------------------------------
 Function    Description
---------------------------------------------------------------------------
 Display     Displays the system's configuration table.
 Exit        Done exit LFU (reset).
 List        Lists the device, revision, firmware name, and update revision.
 Lfu         Restarts LFU.
 Modify      Modifies port parameters and device attributes.
 Readme      Lists important release information.
 Update      Replaces current firmware with loadable data image.
 Verify      Compares loadable and hardware images.
 ? or Help   Scrolls this function table.
---------------------------------------------------------------------------

UPD>
```

2.4.3 Example of Updating CPU Modules with LFU

After LFU is booted from the CD-ROM drive or InfoServer, the update procedure is the same. You have the option of updating individual modules or using wild cards to update groups of modules. Additionally, you can confirm each update or have LFU proceed to completion without pausing.

Command Examples :

1. update (This will update all loadable modules with a confirmation for each.)
2. update kn7c%-ab% (This will update the console code on all CPU modules with confirmation. “%” is a wild card for one character).
3. update kn7c%-ab% -a (This does the same as above without confirmation).
4. Update kn7c%-ab%_arc -a (This will update the AlphaBIOS on all CPU modules without confirmation)
5. Update kn7* -a (This will update both the console and AlphaBIOS for all CPU modules without confirmation).

Proceed to update the firmware (in this example, only the CPU modules are updated with console firmware and not AlphaBIOS) :

```
UPD> update kn7c%-ab%
WARNING: updates may take several minutes to complete for each device.
```

```
   Confirm update on: kn7cf-ab0       [Y/(N)] y

                             DO NOT ABORT!
kn7cf-ab0      Updating to V6.0-1...  Verifying V6.0-1...  PASSED.

   UPD>
```

Exit from the update utility :

```
UPD> exit
Initializing...

ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.f4.f3.f2.f1.f0.
ef.ee.ed.f4.
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.f4.f3.f2.f1.f0.
ef.ee.ed.a2.a4.a5.a7.a8.a9.f4.ec.eb.ea.e9.e8.e7.e6.e5.e3.

F   E   D   C   B   A   9   8   7   6   5   4   3   2   1   0   NODE #
                            A   A   M   .   M   .   .   .   P   TYP
                            o   o   +   .   +   .   .   .  ++   ST1
                            .   .   .   .   .   .   .   .  EB   BPD
                            o   o   +   .   +   .   .   .  ++   ST2
                            .   .   .   .   .   .   .   .  EB   BPD
                            +   +   +   .   +   .   .   .  ++   ST3
                            .   .   .   .   .   .   .   .  EB   BPD

                                .   +   +   +   +   +   +   +   C0 PCI +
                +   +   .   +   .   +   +   +   .   .   .   +   C1 PCI +
                            .   .   .   .   .   .   .   .          EISA +

.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C4
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C5
    +   .   .   .   .   .   +   .   .   .   +   +   +   +       C6 XMI +
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C7

                            .   .  A1   .  A0   .   .   .   .   ILV
                            .   . 4GB   . 4GB   .   .   .   .   8GB
AlphaServer 8400 10-5/625/4, Console V6.0-1 7-May-2001 11:41:06
SROM V3.1, OpenVMS PALcode V1.21-1, Tru64 UNIX PALcode V1.23-1
System Serial = AY12345678, OS = OpenVMS,  9:52:32  December 28, 2000
Configuring Graphics
Configuring I/O adapters...

(..Adapter Listing Omitted...)

P00>>>
```

2.4.4 Saving and Restoring EEPROM Settings,

It is advisable for you to examine and save a written record of your system's EEPROM settings, so that in the unlikely event that the settings were corrupted, you could restore them. These settings include your Environment Variables and Manufacturing Data. (Note that updating your console firmware would not normally corrupt your EEPROM settings, but an operator could incorrectly change them, etc.).

The following procedure shows you how to examine and record the settings, how to re-format the EEPROM, and how to restore the recorded settings :

```
BE SURE TO RECORD THE CURRENT SETTINGS BEFORE RE-FORMATTING THE
EEPROMS.

To display the current settings, type "show *" at the console
prompt. For example :

   P00>>> show *     (show environment variables and write down the settings)

   P00>>> show eeprom manufacturing  (show mfg data and write down the settings)

   Module Serial Number =  AY12345678
   Module Unified 2-5-2.4 Part Number = -E2065-BA.A01
   P00>>> set cpu 2
   P02>>> show eeprom manufacturing
                  ...
Repeat for all CPU modules.

To re-format the EEPROMs, proceed as shown in the following example :


   P00>> build -e
   Build EEPROM on kn7cf-ab0 ? [Y/N]> Y
   Module Serial Number> AY12345678
   Module Unified 2-5-2.4 Part Number> -E2065-BA.A01

   EEPROM built on kn7cf-ab0
   P00>>> init
   Initializing...

Restore your environment variable settings.

   P00>>> set <environment-variable> <setting>

   P00>>> set eeprom manufacturing  (then follow the prompts to restore data)

   P00>>> init
   Initializing...
```

Failure to reset the ewX0_mode EV’s to their appropriate settings may cause disruption of network traffic.

```
Re-input your ewX0_mode settings:

   P00>>>set ewa0_mode  twisted pair
   P00>>>set ewb0_mode  twisted pair
```

2.4.5 Rebuilding Non-Volatile RAM (NVR)

It is advisable to restore NVR settings to their default values after a firmware update.

`Rebuild Non-Volatile RAM (NVR) as follows:`

```
P00>>>build -n
Build NVR on kn7cf-ab0 ? [Y/N]> y

        NVR built on kn7cf-ab0
P00>>>
```

3 AlphaServer 8200/8400 Console and Diagnostic Release Notes

3.1 Console and Diagnostic Enhancements and New Features

The following are enhancements and new features contained in the AlphaServer 8200/8400 console/diagnostic firmware in this release :

3.1.1 Console Enhancements and New Features

- Recognition for DEGPA-TA has been added.
- Fixed VGA problem from V5.8. Under V5.8 the VGA would only work under a limited set of configurations. This has been fixed.
- Code changes have been implemented to fix a probe timeout failure on KGPSA devices. A message containing "probe timeout" indicates that a fibre channel node (HSG80, KGPSA) is in an unresponsive state and may, prior to V6.0 firmware prevent access to the disks for WWIDMGR commands, show device commands, booting a disk or writing a crash dump to the disk. With V6.0 firmware, the console skips attempting to access unresponsive nodes but will report a "probe time out retry" message. There should be no loss of access to online disks.
- Code changes have been implemented to correct a problem where crash dumps written to disks connected via a CIPCA adapter would fail to complete. Prior to V6.0 firmware, on clusters with heavy I/O loads a crash dump to a CIPCA connected disk may fail with the following messages being reported:

  ```
  MSCP: Attempting to reestablish connection
   MCSP: Continuing
  device * no longer valid
  ```

  This problem has been corrected for systems with CIPCA adapters but no CIXCD adapters. The fix is disabled for systems that contain a CIXCD device.
- Updated the KGPSA and WWIDMGR support for Tapes.
- Fixed watch chip time rollover and fixed arc time check
- Added support for LP9002
- Fixed FRU TABLE CPU serial number missing problem.

3.1.2 Diagnostic Enhancements and New Features

- It is recommended that the system be initialized before and after any "TEST" diagnostic is run. This will insure that the system is in a known state before and after testing.
- The following is the current supported functionality of the TEST Command in this release :

See diagnostic restrictions when multiple network adapters are installed.

```
 >>> test
        ^-----Note that when "test" is issued with no
              arguments various device exercisers are
              run, but NO explicit memory tests are
              run.

>>> test ms7cc*
             ^-----Runs Memory Exerciser

>>> test xmi*
            ^-----Runs self-tests and exercisers on
                  XMI adapters.

>>> test kz*
             ^-----Runs exercisers on kzmsa &
                   kzpsa adapters.

>>> test isp*
             ^-----Runs exercisers on ISP1020/40 SCSI
                   interfaces.
```

Please note that there are no CPU tests that are callable via the "test" command. "P00>>>test kn7c*" is not supported.

3.2 Console and Diagnostic Bugs and Restrictions

The following sections list known bugs and restrictions related to the AlphaServer 8200/8400 console/diagnostic firmware in this release:

3.2.1 Console Bugs and Restrictions

- If a secondary partition uses the KGPSA as the boot path, the “restart” operation will not succeed. This was Found in V5.8.

- When the console KGPSA driver starts and the NVRAM has not been formatted, you will see the error message

  ```
  kgpsaa0.0.0.2.4 - Nvram read failed.
  ```

  See the WWIDMGR USERS MANUAL section on "set adapter" to correct this problem.

- The ECU utility is intermittent when run from the advanced mode of console. The utility will load and appear to function but will exhibit an intermittent hang when attempting to add a new device.

  Run this utility from diagnostic mode.

  Ex.

  ```
  P00>>>set mode diagnostic
  Console is in diagnostic mode
  P00>>>configure dev *
  P00>>>runecu
  ```

- Running the RA200FL utility from a CD is not supported.

- Booting from a KFMSB device into a dual-host DSSI cluster sometimes hangs the console. This will require a front-panel keyswitch reset.
- The console will not report mixed-speed CPUs (at 440/625MHz) in the same machine. This unsupported configuration may not prevent an operating system from booting but may cause unpredictable machine behavior. Console will report mixed-speed CPUs at lower clock speeds (300/350 MHz).
- Occasionally, the display output may lose a character. This is most often seen as a shifted row in the console power-up map.
- The command "CDP" operating on a device attached to a KFESB adapter can sometimes hang the console. This will require a front-panel keyswitch reset.
- The KZMSA (SCSI XMI-bus) adapter does not support system disk booting from sub Logical Unit Numbers (LUNs).
- When booting over the network using the "bootp" protocol, if the first boot attempt fails, automatic and manual retries will not succeed. The machine must be initialized before retrying the boot command. If the problem persists, then a direct connection to the Boot Server may be required to avoid timeouts.
- Booting is not allowed from SCSI or DSSI adapters with controller letters greater than "z".

3.2.2 Diagnostic Restrictions

- There are no CPU tests invoked via the "test" command. "P00>>>test kn7c*" is not supported.

4 Invoking ARC Utility Programs

Refer to section 3.2.1, Console Bugs and Restrictions before attempting to run ARC-based utilities.

To help configure an AlphaServer 8200/8400 system, various utilities are required which are based on the Advanced RISC Computing (ARC) Specification developed by Microsoft. The AlphaServer 8200/8400 console firmware provides an ARC-compatible interface which allows these utilities to be invoked from the console command line. The utilities supported with this version of the AlphaServer 8200/8400 console are:

- EISA Configuration Utility (ECU)
- RAID Configuration Utility (RCU)
- RA200FL Firmware Update Utility
- ISP1020/40 EEROM Configuration Utility
- KZPSA Configuration/Diagnostic Utility

4.1 ARC Commands

Two commands, RUNECU and RUN, are provided to invoke ARC utility programs. Before running any ARC utilities, the ARC_ENABLE environment variable must be set to ON. The ADVANCED command set must be selected.

```
P00>>>set arc_enable on                     ! enable ARC interface
P00>>>set console_mode advanced             ! enable Advanced filesystem
P00>>>init                                  ! re-init to load ARC EV's, etc...

 NOTE:  The RUNECU and RUN command are not available until the system has been
        initialized with ARC_ENABLE set to ON.  ALSO, only a serial line
interface
        is supported (no graphics).  The terminal must be a VT320 or greater and
        set as follows:
            -  8-bit character mode
            -  '~' key set to send ESC.
```

After running ARC-based utilities, be sure to reset ARC_ENABLE to “OFF” and re-initialize the console.

```
        P00>> Set ARC_ENABLE off
        P00>> INIT
```

4.1.1 RUNECU Command

The RUNECU command automatically runs the EISA Configuration Utility from floppy disk. A disk containing the ECU must be inserted in the drive before the command is issued.

```
P00>>>runecu
Loading image...
Transferring Control...                    # After about 1 minute the
                                           # following appears:
```

```
                EISA Configuration Utility      Help=F1
+-------- EISA Configuration Utility -------------------+
|                                                       |
| (C) Copyright 1989, 1994                              |
| Micro Computer Systems, Inc.                          |
| All Rights Reserved.                                  |
|                                                       |
| This program is provided to help you set your         |
| computer's configuration.  You should use this        |
| program the first time you set up your computer       |
| and whenever you add additional boards or options.    |
|                                                       |
| To continue, press ENTER.                             |
+-------------------------------------------------------+
| > OK=ENTER <                                          |
+-------------------------------------------------------+
```

After ENTER is pressed, the ECU will load the configuration files from the floppy:

```
         EISA Configuration Utility     Help=F1
           +---------------------------------+
           | Loading configuration files.    |
           |                                 |
           | Please wait ...                 |
           |                                 |
           +---------------------------------+
```

After the files are verified, the ECU main menu displays:

```
                EISA Configuration Utility
+-------- Steps in configuring your computer ------------+
|                                                        |
| Step 1: Important EISA configuration information       |
|                                                        |
| Step 2: Add or remove boards                           |
|                                                        |
| Step 3: View or edit details                           |
|                                                        |
| Step 4: Examine required switches                      |
|                                                        |
| Step 5: Save and exit                                  |
|                                                        |
+--------------------------------------------------------+
| >Select=ENTER<  <Cancel=ESC>                           |
+------+--------------------------Help-------------------+
       |To learn about the EISA configuration process and|
       |how it differs from ISA configuration, press     |
       |ENTER.  To read a short explanation of each of   |
       |the configuration steps, use the UP arrow and    |
       |DOWN arrow keys.                                 |
       +-------------------------------------------------+
```

For those familiar with ECU serial operation, the environment variable TERM, set to VT320, is created automatically.

If a VCS connection is used, the graphics characters used by the ECU will appear as regular characters. This is a side effect of VCS, the program will still run properly.

The first time the ECU is run, a message 'System Board ID mismatch' will be displayed by the ECU. Ignore the message and press return.

If you have changed the EISA configuration, it is necessary to rerun the ECU to reformat the NVRAM data.

Important - There are two variants of the ECU, one for VMS and UNIX, and another one for Windows NT. Be sure to use the appropriate ECU diskette for your operating system.

4.1.2 Stepping Through the ECU Dialog Boxes

The ECU will display a few dialog boxes on the monitor. When these begin to appear do the following :

- At the main dialog box, press “ENTER”
- At the “ID Mismatch” dialog box, press “ENTER” (and wait for about 30 seconds).
- At the main selection dialog box select : “5) Save and Exit”, press “ENTER”
- To the save configuration, press “ENTER”
- To the exit utility, press “ENTER”

The ECU should save the configuration information in NVRAM and then return to the ARC firmware menu. At this point the system should have valid ECU data and be in a consistent state for further system operation.

4.1.3 RUN Command

The RUN command is used to run an ARC Utility program. RUN has four pre-defined shortcut symbols. These environmental variables become available when "arc_enable" is set to "on". The commands may be run from the other media by using the complete file specification.

1. RCU - Run the RAID Configuration Utility (fat:ra200srl.exe)
2. RA200FL - Update firmware on RAID controller (fat:ra200fl.exe)
3. EEROMCFG - Run the ISP1020/40 EEROM Configuration Utility (iso9660:[utility]eeromcfg.exe)
4. UTIL_CLI - Run the KZPSA Configuration Utility (iso9660:[utility]util_cli.exe)

Options 1, 3 and 4 (RCU, EEROMCFG and UTIL_CLI) can be run from floppy or CD-ROM. Option 2 (RA200FL) must be run from floppy. Although the RAID controller firmware update utility is on the Alpha Systems Firmware Update CD, it cannot be run from the CD on the AlphaServer 8200/8400.

The RUN command syntax is:

```
run <filesys:><[directory]><program> [-d <device>][-p <n>][-s <parameter string>]
```

where <filesys:> is the media load type (FAT = floppy, ISO9660 = CD-Player), <[directory]>is the subdirectory where the utility resides, <program> is the command option selected, <device> is the console device containing the program (default is dva0), <n> is the unit number of the PCI to configure, and <parameter string> are any optional parameters that must be passed to the utility, which must be enclosed in quotes.
The utility documentation specifies any required parameters.

To use this command, the ARC_ENABLE environment variable must be set to ON and the system initialized.

Command line example for RCU (ra200srl) program from floppy :

```
p00>>> sho dev floppy
```

```
polling for units on floppy0, slot 0, bus 1, hose6. . .
dva0.0.01100.6      DVA0                    RX26/RX23

P00>>> run rcu -p 1
Loading image. . .
Transferring control. . .
```

Command line example for RCU (ra200srl) program from cdrom :

```
P00>>> show device isp3           !use SHOW DEVICE to find CD-ROM
polling for units on isp3, slot 5, bus 0, hose0...
dkd400.4.0.5.0          DKD400              RRD44   0064
dkd500.5.0.5.0          DKD500              RZ26L   440C
P00>>> run iso9660:[utility.swxcrmgr]ra200srl.exe  -d dkd400  -p 0
Loading image...
Transferring control...
```

Note: If you run RCU from cdrom, you will not be able to save your configuration.

Command line example for ra200fl program from floppy :

```
p00>>> sho dev floppy
polling for units on floppy0, slot 0, bus 1, hose6. . .
dva0.0.01100.6      DVA0                    RX26/RX23

P00>>> run ra200fl -p 1 -s "swxcrfwp.249"
Loading image. . .
Transferring control. . .
```

Note - The ra200fl program must be run from floppy.

Example for ISP1020/40 EEPROM Configuration Utility from CD :

```
P00>>> show device isp3           !use SHOW DEVICE to find CD-ROM
polling for units on isp3, slot 5, bus 0, hose0...
dkd400.4.0.5.0          DKD400              RRD44   0064
dkd500.5.0.5.0          DKD500              RZ26L   440C
P00>>> run eeromcfg  -d dkd400  -p 0
Loading image...
Transferring control...
           # The screen is erased, followed by:

----------------------------------------------------------------
           ISP1020/40 EEROM Configuration Utility
----------------------------------------------------------------


           +=========== Select ISP1020/40 ==========+
           |  Bus     Virtual Slot       Address    |
           |                                        |
           |[  0            0            01003000]  |
           |   0            1            01002000   |
           |   0            4            01001000   |
           |   0            5            01000000   |
           |----------------------------------------|
           |     < (O)K >          < E(x)it >       |
           +========================================+
```

Example for KZPSA Configuration Utility from CD :

```
P00>>> show device isp3           !use SHOW DEVICE to find CD-ROM
```

```
polling for units on isp3, slot 5, bus 0, hose0...
dkd400.4.0.5.0          DKD400            RRD44   0064
dkd500.5.0.5.0          DKD500            RZ26L   440C
P00>>> run util_cli  -d dkd400  -p 0
Loading image...
Transferring control...
          ...
```

5 Discrepancies in AlphaServer GS60/140 and 8200/8400 Operations Manual

In the *AlphaServer GS60/140 and 8200/8400 Operations Manual*, order number EK-T8030-OP.C01, several discrepancies have been reported between certain console command behaviors and those described in the manual. In addition, the effect of certain SRM Console "special" characters may vary with the type of keyboard used. The following list is not meant to be exhaustive.

1. Page 7-6, Table 7-2,: Ctrl-D, Left Arrow. The left arrow performs as stated. Ctrl-D does not move the cursor but will invoke the console's X-Delta Debugger. If the debugger is invoked, return to the console prompt by typing: “;p <return>”
2. Page 7-6, Table 7-2: Ctrl-H, BS, F12. Ctrl-H brings the cursor directly to the beginning of the line. BS or Back Space will bring the cursor back to the beginning of the line, space by space, deleting the character to the left of the cursor as it does. F12 may not perform any function.
3. Page 7-6, Table 7-2,: Ctrl-J deletes the word to the left of the cursor.
4. Page 7-7, The delete key may not perform any function. To delete the character previously typed, the Back Space key may be used.
5. Page 7-7, Ctrl-D does not move the cursor but will invoke the console's X-Delta Debugger. If the debugger is invoked, return to the console prompt by typing: “;p <return>”
6. Page 7-52: The SHOW EEPROM SERIAL function is not supported. To display the system serial number, type “SHOW SYS_SERIAL_NUM”